DukeNUS Medical School

Signature Seminar Series

Cell, Tissue, and Genetic Engineering Therapies for Striated Muscle Repair

ABOUT THE LECTURE

In this talk, I will describe our recent progress on using tissue and genetic engineering techniques for in vitro modeling and in vivo treatment of cardiac and skeletal muscle disease. I will first present a human pluripotent stem cell based methodology for engineering large, highly functional pre-vascularized cardiac tissue patches for treatment of ischemic heart disease. I will then describe how building on our work with rat myogenic cells, we have utilized human primary or pluripotent stem cell-derived myogenic cells to engineer contractile skeletal muscle tissues for modeling of rare congenital muscle diseases (e.g. Duchenne muscular dystrophy, Pompe disease, dysferlinopathy) and treatment of volumetric muscle loss. I will finally present our research on use of engineered prokaryotic sodium channels to convert unexcitable fibroblasts to excitable cells, augment cardiomyocyte conduction, and develop new therapies for cardiac arrhythmias. Together, results of this work have provided new in vitro platforms for studying human excitable tissue function, disease, and drug response and have laid the foundation for the development of novel therapies for striated muscle disorders.

Speaker: **Prof Nenad Bursac**
Professor of Biomedical Engineering
Co-Director of the Regeneration Next Initiative
Duke University School of Medicine

Host: **Prof Patrick Casey**
Senior Vice Dean, Research
Duke-NUS Medical School

Date: **Thursday, 6 June 2019**

Time: **12.00 PM - 1.00 PM**
(Light refreshments will be served at 11.30 AM)

Venue: **Duke-NUS Medical School**
Amphitheatre, Level 2

Contact Person: **Ms Kathleen Chan, Duke-NUS Research Affairs Department**
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ABOUT THE SPEAKER

Dr. Nenad Bursac is a Professor of Biomedical Engineering at Duke University. He has pioneered first engineered mammalian heart tissues and methods to study cardiac arrhythmias in a dish. Dr. Bursac's research includes human organ-on-a-chip systems to study striated muscle pathophysiology and drug response, and cell- and gene-based therapies for cardiac and skeletal muscle regeneration. Dr. Bursac has authored over 100 publications and mentored over 40 trainees. He is an AIMBE and BMES fellow.

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